

Trimay® Wear Plate TWP171 Iron-based Steel Alloy Weld Wire

Category : Metal , Ferrous Metal , Alloy Steel

Material Notes:

Overlay Description: TWP171w GMAW OAW is an iron based steel alloy with a near nanoscale (submicron) microstructure that includes chromium, molybdenum and niobium in the material chemistry, resulting in an overlay wear solution well suited for the toughest jobs in the most extreme service environments. **Key Performance Characteristics:** 66 - 71 HRC single and double pass weld deposits, Exceptional resistance to severe sliding abrasion, Provides longer lasting wear life than most chrome carbide and complex carbide alloys, Improved impact resistance results from complex borocarbide phases surrounded by ductile phases that form during welding. TWP171w is a multicomponent steel alloy with a unique uniform glass-forming melt chemistry that allows high undercooling to be achieved during welding. This results in considerable refinement of the crystalline microstructure down to a near nanosize (submicron) range. Unlike conventional weld overlay materials which are macrocomposites containing hard particles and general carbides in a binder, the refined microstructure of TWP171w does not incorporate distinct hard particles in a binder and is a uniformly hard matrix when welded. This allows TWP171w to provide vastly improved hardness and wear resistance that lasts significantly longer than conventional macrocomposites. Additionally, TWP171w is an iron-based alloy without tungsten carbide particulates. **High Hardness:** TWP171w maintains maximum hardness performance of 66-71 HRC from the weld interface throughout the entire overlay in single pass applications allowing the overlay to be fully protective throughout the volume. **High Wear Resistance:** TWP171w weld deposits should be limited to two layers maximum for most applications. Both single and double layers provide exceptional wear resistance of 0.09 - 0.11 g (+/- 0.02) mass loss in ASTM G65-04 dry sand rubber wheel abrasion tests. **Damage Tolerance:** The superior toughness of TWP171w occurs from the in-situ formation of high-volume fraction of refined complex borocarbide phases during welding which are surrounded by ductile phases. The borocarbide phases, which form during solidification, are completely wetted by the matrix and prevent premature pullout, delamination and crack nucleation. The refined nature of the borocarbide phases allows the reduction of stress concentration sites and the ductile matrix supplies effective crack blunting and bridging, resulting in improved impact resistance. Information provided by Trimay®

Order this product through the following link:

http://www.lookpolymers.com/polymer_Trimay-Wear-Plate-TWP171-Iron-based-Steel-Alloy-Weld-Wire.php

Physical Properties	Metric	English	Comments
Density	7.36 g/cc	0.266 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	66 - 71	66 - 71	
K Factor (Wear Factor)	0.070 - 0.13	0.070 - 0.13	[g], 6000 cycles mass loss; ASTM G65-04 Procedure A

Component Elements Properties	Metric	English	Comments
Aluminum, Al	<= 5.0 %	<= 5.0 %	
Boron, B	<= 7.0 %	<= 7.0 %	
Carbon, C	<= 2.0 %	<= 2.0 %	

Component Elements Properties	Metric	English	Comments
Iron, Fe	>= 49 %	>= 49 %	
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Molybdenum, Mo	<= 6.0 %	<= 6.0 %	
Niobium, Nb (Columbium, Cb)	<= 6.0 %	<= 6.0 %	
Silicon, Si	<= 2.0 %	<= 2.0 %	

Descriptive Properties	Value	Comments
Available Sizes: Wire	1.2	[mm], cored wire
	1.6	[mm], cored wire
	2.4	[mm], cored wire
	2.8	[mm], cored wire
	3.2	[mm], cored wire
Drop Impact Testing	Passed	Multiple Impacts at 165[ft/lbs]
Packaging: Wire	1.2	33 lb wire spools and in bulk
	1.6	33 lb wire spools and in bulk
	2.4	55 lb wire spools and in bulk
	2.8	55 lb wire spools and in bulk
	3.2	55 lb wire spools and in bulk

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